

IN THE CLAIMS

This listing of claims will replace all prior versions
and listings of claims in the application:

CLAIMS 1-40 HAVE BEEN CANCELLED

41. (currently amended) A method for sterilizing a heat sensitive fluid in a medical solution comprising providing a first heat sensitive fluid component, providing a second fluid component, heating said second fluid component to a first temperature, said first temperature being greater than a predetermined sterilizing temperature, mixing said first heat sensitive fluid component with said heated second fluid component, whereby said first heat sensitive fluid component is heated and said heated second fluid component is cooled, and a mixed fluid is provided at a second temperature, said second temperature being at least said predetermined sterilizing temperature, and maintaining said mixed fluid at said second temperature for a predetermined sterilizing period, whereby a predetermined sterilizing dose is obtained for delivery to a recipient.

42. (previously presented) The method of claim 41 including controlling said heating of said second fluid component to said first temperature to ensure that said mixed fluid reaches said second temperature.

43. (previously presented) The method of claim 41 including cooling said mixed fluid.

44. (previously presented) The method of claim 41 wherein said first heat sensitive fluid component comprises a component selected from the group consisting of glucose and a glucose polymer.

45. (previously presented) The method of claim 41 wherein said second fluid component comprises water.

46. (previously presented) The method of claim 45 wherein said second fluid component includes electrolytes.

47. (previously presented) The method of claim 46 wherein said electrolytes are selected from the group consisting of sodium chloride, calcium chloride, magnesium chloride, potassium chloride, sodium bicarbonate, and sodium lactate.

48. (previously presented) The method of claim 41 including preheating said first heat sensitive fluid component.

49. (previously presented) The method of claim 41 including maintaining said first heat sensitive fluid component and said second fluid component under a predetermined pressure sufficient to prevent boiling of said first heat sensitive fluid component and said second fluid component.

50. (previously presented) The method of claim 49 wherein said providing of said first heat sensitive fluid component and providing of said second fluid component comprises providing flows of said fluid components.

51. (previously presented) The method of claim 50 wherein said flow of said first heat sensitive fluid component comprises a first flow rate and said flow of said second fluid component comprises a second flow rate, said second flow rate being greater than said first flow rate.

52. (previously presented) The method of claim 50 including determining said first and second flow rates by means of a weighing device or a flow meter, and maintaining said first heat sensitive fluid component and said second fluid component at said predetermined pressure by means of a pump.

53. (previously presented) The method of claim 50 wherein said heat sensitive fluid component comprises a complex fluid comprising a plurality of first fluid components including said first heat sensitive fluid component, and including sequentially sterilizing said plurality of first fluid components.

54. (previously presented) The method of claim 53 including providing a plurality of sources of concentrate fluid components ~~for each of said plurality of first fluid components,~~ providing a source of said second fluid component, said second fluid component comprising water, pumping one of said plurality of sources of said concentrate fluid components so as to increase the pressure thereof, pumping said water so as to increase the pressure thereof, and repeating said method for each of said plurality of first fluid components.

55. (previously presented) The method of claim 54 including preheating each of said plurality of first fluid components before said mixing with said heated second fluid component.

56. (previously presented) The method of claim 55 wherein said preheating comprises heat exchanging each of said plurality of said first fluid components with said predetermined sterilized dose.

57. (previously presented) The method of claim 56 wherein said preheating comprises initially heating said second fluid component by heat exchange with said predetermined sterilized dose, and further preheating said second fluid component to said first temperature by means of a separate heater.

58. (previously presented) The method of claim 57 wherein said separate heater comprises an electric heater.

59. (previously presented) The method of claim 58 including controlling said further preheating of said second fluid component by means of a temperature sensor downstream of said maintaining of said mixed fluid at said second temperature, whereby said second temperature is maintained at said at least said predetermined sterilizing temperature.

60. (previously presented) The method of claim 41 including dissolving at least one powdered substance in said

second fluid component to provide at least one of said first heat sensitive fluid components and said second fluid component.

61. (previously presented) The method of claim 41 including providing a third heat sensitive fluid component, and mixing said first heat sensitive fluid component and said third heat sensitive fluid component with said heated second fluid component.

62. (previously presented) The method of claim 61 wherein said third heat sensitive fluid component comprises water and at least one amino acid.

63. (previously presented) Apparatus for sterilizing a heat sensitive fluid in a medical solution comprising a first vessel containing a first heat sensitive fluid component, a second vessel containing a second fluid component, a first heater for heating said second fluid component to a first temperature, said first temperature being greater than a predetermined sterilizing temperature, mixing means for mixing said first heat sensitive fluid component with said second fluid component to obtain a mixed fluid at a second temperature at least equal to said predetermined sterilizing temperature, and residence means for maintaining said mixed fluid at said second temperature for a predetermined sterilizing period, whereby a sterilized fluid is provided for delivery to a recipient.

64. (previously presented) The apparatus of claim 63 including a controller for controlling said first heater to obtain said first temperature.

65. (previously presented) The apparatus of claim 63 including a cooler for cooling said mixed fluid.

66. (previously presented) The apparatus of claim 63 wherein said first heat sensitive fluid component comprises a component selected from the group consisting of glucose and a glucose polymer.

67. (previously presented) The apparatus of claim 63 wherein said second fluid component comprises water.

68. (previously presented) The apparatus of claim 67 wherein said second fluid component includes an electrolyte.

69. (previously presented) The apparatus of claim 68 wherein said electrolyte is selected from the group consisting of sodium chloride, calcium chloride, magnesium chloride, potassium chloride, sodium bicarbonate and sodium lactate.

70. (previously presented) The apparatus of claim 63 including a preheater for preheating said first heat sensitive fluid component.

71. (previously presented) The apparatus of claim 63 including pressurizing means for maintaining said first heat sensitive fluid component and said second fluid component at a predetermined pressure to prevent said first heat sensitive fluid component and said second fluid component from boiling.

72. (previously presented) The apparatus of claim 63 wherein said first heat sensitive fluid component and said second fluid component comprise fluid flows.

73. (previously presented) The apparatus of claim 72 wherein said fluid flow of said first heat sensitive fluid component has a first flow rate and said fluid flow of said second fluid component has a second flow rate, said second flow rate being greater than said first flow rate.

74. (previously presented) The apparatus of claim 73 including flow rate determining means for determining said first and second flow rates, said pressurizing means comprising a pump.

75. (previously presented) The apparatus of claim 74 wherein said flow rate determining means comprises a weighing device or a flow meter.

76. (previously presented) The apparatus of claim 72 wherein said first heat sensitive fluid component comprises a

plurality of first fluid components including said first heat sensitive fluid component, and including means for sequentially sterilizing each of said plurality of first fluid components and said second fluid component.

77. (previously presented) The apparatus of claim 76 wherein said means for sequentially sterilizing includes supply means for supplying said plurality of first fluid components, said first vessel comprising a plurality of containers for concentrates of said plurality of first fluid components, said second vessel comprising an inlet for said second fluid component, a concentrate pump for pumping one of said plurality of first fluid components from one of said plurality of containers whereby the pressure of said one of said first fluid components is increased, a water pump for pumping said second fluid component, said second fluid component comprising water, whereby the pressure of said second fluid component is increased, said heater comprising a water heater for heating said second fluid component to said first temperature, said mixing means comprising a mixer for mixing said one of said plurality of first fluid components and said heated second fluid component to provide said mixed fluid, said residence means comprising means for maintaining said mixed fluid at said first temperature for a predetermined sterilizing period to provide a sterilized dose for delivery to a recipient, and including control means for controlling and repeating said sequential sterilizing of each of said plurality of first fluid components to provide a final sterilized complex fluid.

78. (previously presented) The apparatus of claim 77 including preheating means for preheating said one of said plurality of first fluid components.

79. (previously presented) The apparatus of claim 78 including a heat exchanger for recovering heat from said sterilized dose.

80. (previously presented) The apparatus of claim 79 wherein said heat exchanger preheats said second fluid component by heat exchange with said sterilized dose, and including a heater for heating said second fluid component to said first temperature.

81. (previously presented) The apparatus of claim 80 including a temperature sensor downstream of said residence means for controlling said heater, whereby said first temperature comprises a temperature at least sufficient to constitute said sterilizing temperature.

82. (previously presented) The apparatus of claim 63 wherein at least one of said first and second vessels includes at least one powdered substance for dissolution in water to provide at least one of said first and second fluids.

83. (previously presented) The apparatus of claim 63 including a third vessel for containing a third heat sensitive fluid component.

84. (previously presented) The apparatus of claim 83 wherein said third heat sensitive fluid component comprises water and at least one amino acid.